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Date: August 14, 2004	Phone Number	Fax Number
To: Examiner D. Chacko		(571) 273-8300
From: Dominic M. Kotab		

Docket No.: HIT1P023/HSJ920030085US1

App. No: 10/733,097

Total Number of Pages Being Transmitted, Including Cover Sheet: 11

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Please deliver to Examiner Chacko.

Thank you,

Dominic M. Kotab

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PRE-APPEAL BRIEF REQUEST FOR REVIEW		Docket Number (Optional) HIT1P023/HSJ920030085US1	
I hereby certify that this correspondence is being facsimile transmitted to the Commissioner for Patents, Alexandria, VA 22313-1450 to fax number (571) 273-8300 on <u>August 14, 2006</u> Signature <u><i>April Skovmand</i></u> Typed or printed name <u>April Skovmand</u>		Application Number 10/733,097	Filed 12/10/2003
		First Named Inventor Daniel W. Bedell	
		Art Unit 1756	Examiner D. Chacko
Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request. This request is being filed with a notice of appeal. The review is requested for the reason(s) stated on the attached sheet(s). Note: No more than five (5) pages may be provided.			
I am the <input type="checkbox"/> applicant/inventor. <input type="checkbox"/> assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96) <input checked="" type="checkbox"/> attorney or agent of record. 42,762 Registration number _____ <input type="checkbox"/> attorney or agent acting under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34 _____		 Signature Dominic M. Kotab Typed or printed name 408-971-2573 Telephone number <u>8/14/06</u> Date	
NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.			
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This collection of information is required by 35 U.S.C. 132. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11, 1.14 and 41.6. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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Application No. 10/733,097
Group Art Unit: 1756

Arguments Accompanying Pre-Appeal Brief Request for Review

Submitted below are arguments specifying clear errors in the Examiner's rejections, or the Examiner's omissions of one or more essential elements needed for a *prima facie* rejection.

Claims 1-8, 13-14

In the Office Action dated May 15, 2006, claims 1-8 and 13-14 were rejected under 35 USC 103(a) as being unpatentable over Breyta et al. (US2001/0005741) in view of Whewell et al. (US5017271).

The analysis of obviousness was set forth in *Graham v. John Deere*, 383 U.S. 1, 148 USPQ 459 (1966). In order to establish a *prima facie* case of obviousness, three basic criteria must be met:

First, there must be some *suggestion or motivation*, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the teachings of the references. Second, there must be a *reasonable expectation of success*. Finally, the prior art reference or combined references must teach or suggest *all the claim limitations*. *The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art*, and not based on applicant's disclosure (*In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991; emphasis added).

Applicants respectfully traverse the rejection of claims 1-8 and 13-14 as failing the *Graham* test. Specifically, regarding claim 1 and its dependents, the combination proposed in the rejection fails the first element of the *Graham* test.

Regarding claims 1-8 and 13-14, Applicants respectfully disagree that there is suggestion or motivation to combine the teachings of Breyta with Whewell. Particularly, Whewell teaches away from plating using an underlayer. A *prima facie* case of obviousness may be rebutted by showing that the art, in any material respect, teaches away from the claimed invention. *In re Geisler*, 116 F.3d 1465, 1471, 43 USPQ2d 1362,

HIT1P023/HSJ9200300085US1

- 1 -

Application No. 10/733,097
Group Art Unit: 1756

1366 (Fed. Cir. 1997) [emphasis added]. It is improper to combine references where the references teach away from their combination. *In re Grasselli*, 713 F.2d 731, 743, 218 USPQ 769, 779 (Fed. Cir. 1983).

The claimed invention requires coating a substrate with a barrier layer, and coating the barrier layer with a top layer comprising a photoresist. In sharp contrast, Whewell teaches away from the claimed invention, in violation of the rule of *In re Geisler, supra*. For example, Whewell states that “[t]he present invention also eliminates the need for a pre-treatment of the metallic surfaces prior to the application of the photoresist, and allows for better resolution in the photo imaging process.” See Whewell col. 3, lines 26-30. Whewell clearly indicates that it is a purpose of his invention to eliminate a pre-treatment.

Whewell goes on to indicate that such a pretreatment is not only unnecessary, but is actually undesirable, thereby teaching away from the claimed invention in violation of the rule of *In re Grasselli, supra*. The rejection indicates that it would have been obvious to modify Breyta’s using a plating process as suggested by Whewell. However, as shown in Breyta’s FIGS. 2-3 and 6-7, an undercut is formed as part of the photoresist patterning process. Referring next to Whewell col. 2, lines 26-34, Whewell states that masking processes such as that disclosed in Breyta are problematic. Particularly, Whewell states that underlayers under a photoresist mask result in formation of an undercut under the photoresist. This in turn results in conductive lines that do not possess rectangular dimensions. Particularly, such masks result in conductive lines that are curved inwardly. This in turn adversely affects the minimum size possible for manufacturing conductive lines. Accordingly, Whewell’s invention “eliminates the need for a pre-treatment of the metallic surfaces prior to the application of the photoresist, and allows for better resolution in the photo imaging process.” See Whewell col. 3, lines 26-31. It is clear that Whewell teaches away from plating in a process as taught by Breyta, as to do so would result in poor definition of the conductive lines that are so critical to Whewell’s invention. Applying the rules of *In re Geisler*, and *In re Grasselli*, because Whewell not only teaches away from masking processes using

HIT1P023/HISJ9200300085US1

- 2 -

Application No. 10/733,097
Group Art Unit: 1756

an underlayer and undercut, but actually makes such an object of his invention, it is clear that Whewell teaches away from combination with Breyta. It is improper to combine references where the references teach away from their combination. *In re Grasselli*. Reconsideration and allowance of claims 1-8 and 13-14 is respectfully requested.

Further, the mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). Although a prior art device "may be capable of being modified to run the way the apparatus is claimed, there must be a suggestion or motivation in the reference to do so." 916 F.2d at 682, 16 USPQ2d at 1432.). As noted in the Office Action, Breyta does not mention plating. As noted above, Whewell indicates that plating in conjunction with a mask having an undercut is undesirable. Therefore, it cannot be said that the prior art suggests the desirability of the combination, as required by *In re Mills*.

For any of the foregoing reasons, the rejection fails the first prong of the *Graham* test. Reconsideration and allowance of claims 1-8 and 13-14 is respectfully requested.

Claims 9-11

Claims 9-11 have been rejected under 35 USC 103(a) as being unpatentable over Breyta et al. in view of Whewell and further in view of Lee (US6866987).

Regarding claims 9-11, Applicants have shown that parent claim 1 is allowable over the combination of Breyta and Whewell. Accordingly, the rejection based on Breyta, Whewell and Lee suffers from the same deficiencies, and therefore is improper.

Regardless, Applicants also respectfully assert that the combination proposed in the rejection fails the third prong of the *Graham* test. Particularly, regarding claim 9, Lee has been added to show that the developer does not remove the exposed portion of the barrier layer. Applicants respectfully disagree. Referring to Lee FIG. 2 and related description at col. 3, lines 28-64 (cited in part in the rejection), it is clear that the underlayer 25 is in fact removed with the photoresist layer 12 after exposure. As shown,

HUT1P023/HSJ9200300085US1

- 3 -

Application No. 10/733,097
Group Art Unit: 1756

after exposure, the photoresist layer 12 and underlayer 25 are removed. Note with particularity Lee col. 3, lines 42-45, which states that "Layers 25 and 12 together form a bilayer which is treated as a single layer for purposes of exposure to radiation and subsequent development." Then, as noted at Lee col. 3, lines 54-56, etching of the underlayer 25 is allowed to continue to create an undercut, as shown in Lee FIG. 4. Accordingly, Lee does not teach or suggest that the underlayer 25 remains after radiation and development. For this reason as well, the rejection fails the *Graham* test. Reconsideration and allowance of claim 9 is respectfully requested.

Regarding claims 10-11, Applicants also respectfully disagree that Lee teaches or suggests removal of underlayer 25. Particularly, as mentioned immediately above, the underlayer 25 is removed as part of the developing process. Further, referring to Lee col. 4, lines 9-15 (cited in the rejection), Applicants note that this section refers to using the remaining photoresist 12 as a mask for etching and milling of a substrate 22, as shown in FIG. 4 (prior to milling or etching) and FIGS. 5-6 (after milling or etching). Accordingly, Lee does not teach or suggest that the underlayer 25 is removed by milling or etching. Thus, the rejection fails the *Graham* test. Reconsideration and allowance of claims 10-11 is respectfully requested.

Claim 12

Claim 12 has been rejected under 35 USC 103(a) as being unpatentable over Breyta et al. in view of Whewell and further in view of Pinarbasi (US6218056).

Applicants have shown that the parent claim 1 is allowable over the combination of Breyta and Whewell. Accordingly, the rejection based on Breyta, Whewell and Pinarbasi suffers from the same deficiencies, and therefore is improper.

Regardless, Applicants also respectfully assert that the combination proposed in the rejection fails the third prong of the *Graham* test. Claim 12 requires that no undercuts are created under the photoresist. While Pinarbasi indicates that the length of the undercut can be controlled by varying the amount of time the weak developer is left in place, Pinarbasi does indeed indicate that an undercut is present. First, by stating that

HIT1P023/HSJ9200300085US1

- 4 -

Application No. 10/733,097
Group Art Unit: 1756

the length of the undercut is controllable, he implies that an undercut is present. Second, Pinarbasi FIG. 12 shows an undercut. Nowhere does Pinarbasi suggest that no undercut is present. Thus, the rejection fails the *Graham* test. Reconsideration and allowance of claim 12 is respectfully requested.

Claim 36

Claim 36 has been rejected under 35 USC 103(a) as being unpatentable over Breyta et al. in view of Whewell and further in view of Hawkins (US5006202).

Applicants have shown that claim 1 is allowable over the combination of Breyta and Whewell. Claim 36 contains limitations similar to claim 1. Accordingly, the rejection of claim 36 based on Breyta, Whewell and Hawkins suffers from the same deficiencies as the rejection of claim 1, and therefore is improper.

Applicants also argue that Whewell teaches away from its combination with Hawkins, thereby negating a prima facie case of obviousness per the rule of *In re Grasselli*. It is improper to combine references where the references teach away from their combination. *In re Grasselli*. The rejection indicates that Hawkins discloses that the substrate is protected by a protective layer. Looking closer at the section of Hawkins cited in the rejection, it is seen that Hawkins actually uses two underlayers under the photoresist (masking layer and protective layer). Again, Whewell states that "[t]he present invention also eliminates the need for a pre-treatment of the metallic surfaces prior to the application of the photoresist, and allows for better resolution in the photo imaging process." See Whewell col. 3, lines 26-30. Reconsideration and allowance of claim 36 is respectfully requested.

HIT1P023/HSJ9200300085US1

- 5 -